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History of a surra outbreak and treatment evaluations in horses in Thailand

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Abstract

Trypanosoma evansi is the main pathogenic trypanosome of livestock in South-East Asia (SEA); it is the causative agent of surra, a disease mechanically transmitted by biting insects. Surra is of major importance as it can spread to many domestic and wild species. If cattle and buffaloes may develop acute form, they usually develop a chronic form with depression and reluctance to work, while horses undergo more acute forms often leading to death; on the contrary the disease rarely affects pigs and small ruminants in SEA. Surra's economic impact is consequently high as the disease can lower meat, milk and manure production, decrease work force and fertility and cause abortion and mortality. Surra also entails high treatment costs, hinders the efficacy of vaccination campaigns due to the induced immunosuppression and limits animal movements for sales as well as for touristic and sport events.

To illustrate the relative roles of those different domestic host species in the epidemiology of *T. evansi* in the SEA context, the history of a surra outbreak that occurred in 2011 in Surat Thani, Southern Thailand, in a mixed farm owning 41 Zebu cattle, 103 Angol goats and 12 local horses, is described. This outbreak also served as an opportunity to evaluate diminazen aceturate and melarsomine hydrochloride treatments and to emphasize good practices for outbreak management. Additionally, treatment evaluations were carried out in horses naturally found infected in Nakhon Pathom Province (West Central Thailand).

In Surat Thani's farm, animals from the 3 species were examined for clinical signs and sampled for blood several times before and after treatment, especially horses; *T. evans*i infection was diagnosed through parasitological, serological and molecular methods. From this follow-up in a mixed farm with 3 host species grazing together, it appeared that mechanical transmission was very quick and effective in horses and bovines. Morbidity and mortality in horses was very high compared to bovines, which exhibited only mild clinical signs and very low mortality (only one cattle died); conversely, goats where almost not infected. Persistence or early relapses of clinical signs 1-2 weeks after treatments of horses demonstrated that diminazen aceturate was no longer efficient, while melarsomine hydrochloride could be successfully used. However, not all animals were treated, and most of the animals were found infected again several weeks later. Finally, all infected horses died (11 out of 12).

Other evaluations made in Nakhon Pathom showed the inefficacy of diminazen aceturate treatment while with quynapiramine or melarsomine hydrochloride treatment were successful in early stages. However, none of those drugs was efficient if used after the appearance of nervous signs.

Measures taken to eradicate *T. evansi* from an isolated farm are discussed and lessons learnt are highlighted.

Key words: *Trypanosoma evansi*, surra, outbreak, treatment, cattle, horses, goats, Thailand.